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PATENT
Our Docket: P-UW 4979

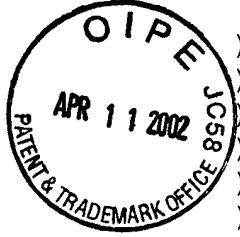
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Loeb et al.

Serial No.: 09/972,834

Filed: October 4, 2001

For: THERMOSTABLE POLYMERASES
HAVING ALTERED FIDELITY AND
METHODS OF IDENTIFYING AND
USING SAME



Commissioner for Patents
Washington, D.C. 20231

Sir:

INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request that the Examiner consider and make of written record the references submitted under 37 C.F.R. § 1.97 and cited by the Examiner in the following parent application: U.S. Serial No. 08/978,806, filed November 26, 1997.

For the Examiner's convenience, submitted herewith is a new PTO-1449 form, listing the references submitted and cited in the parent application(s). Please initial each reference considered and return the form with the next communication to Applicants.

Copies of the previously cited and submitted references are enclosed.

Examiner: Unknown

Group Art Unit: 1656

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231, on April 8, 2002.

By 
Deborah L. Cadena, Reg. No. 41,048

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Inventors Loeb et al.
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No fee is deemed necessary in connection with the filing of this Information Disclosure Statement. However, if any fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-0370.

Respectfully submitted,

April 8, 2002

Date



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Form PTO 1449 US Department of Commerce Patent and Trademark Office	ATTY DOCKET NO: P-UW 4979	SERIAL NO. 09/972, 834
	APPLICANT: Loeb et al.	
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U.S. PATENT DOCUMENTS

EXAM. INITIALS	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	5,614,365	3/25/97	Tabor et al.	435	6	11/10/94
	5,945,312	8/31/99	Goodman et al.	435	91.1	11/7/97
	5,948,614	9/7/99	Chatterjee	435	6	9/6/96
	5,976,842	11/2/99	Wurst	435	91.2	10/30/97
	5,939,292	8/17/99	Gelfand et al.	435	91.2	8/5/97
	6,015,668	1/18/00	Hughes et al.	435	6	9/6/96

FOREIGN PATENT DOCUMENTS

EXAM. INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION (YES/NO)
	EP 0416801	8/29/90	European			
	EP 0655506	11/24/96	European			
	EP 0727496	11/24/94	European			
	WO 91/02090	2/21/91	PCT			
	WO 95/14782	6/1/95	PCT			
	WO 95/33853	14/12/95	PCT	C12Q	1/68	
	WO 96/10640	4/11/96	PCT			
	WO 96/34980	11/7/96	PCT			
	WO 96/41014	19/12/96	PCT	C12Q	1/68	
	2302590	12/11/96	United Kingdom			

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

	Barnes, "PCR amplification of up to 35-kb DNA with high-fidelity and high-yield from λ bacteriophage templates," <u>Proc. Natl. Acad. Sci. USA</u> , 91:2216-2220 (1994).
	Barnes, "The fidelity of Taq polymerase catalyzing PCR is improved by an N-terminal deletion," <u>Gene</u> , 112:29-35 (1992).
	Bebenek et al., "The Fidelity of DNA Synthesis Catalyzed by Derivatives of <i>Escherichia coli</i> DNA Polymerase I," <u>J. Biol. Chem.</u> , 265:13878-13887 (1990).
	Beese et al., "Structure of DNA polymerase I klenow fragment bound to duplex DNA," <u>Science</u> 260:352-355 (1993)
	Bell et al., "Base Miscoding and Strand Misalignment Errors by Mutator Klenow Polymerases with Amino Acid Substitutions at Tyrosine 766 in the O Helix of the Fingers Subdomain," <u>J. Biol. Chem.</u> , 272:7345-7351 (1997).
	Braithwaite and Ito, "Compilation, alignment, and phylogenetic relationships of DNA polymerases," <u>Nucleic Acids Res.</u> 21:787-802 (1993)
	Carroll et al., "A mutant of DNA polymerase I (Klenow fragment) with reduced fidelity," <u>Biochem.</u> , 30:804-813 (1991).
	Dong and Wang, "Mutational Studies of Human DNA Polymerase α , " <u>J. Biol. Chem.</u> , 270:21563-21570 (1995).
	Drosopoulos and Prasad, "Increased Polymerase Fidelity of E89G, a Nucleoside Analog-Resistant Variant of Human Immunodeficiency Virus Type 1 Reverse Transcriptase," <u>J. Virol.</u> , 70:4834-4838 (1996).
	Dube et al., "Artificial mutants generated by the insertion of random oligonucleotides into the putative nucleoside binding site of the HSV-1 thymidine kinase gene," <u>Biochemistry</u> 30:11760-11767 (1991)

EXAMINER	DATE CONSIDERED
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<p style="text-align: center;"><i>O I P E</i></p> <p style="text-align: right;">TECH CENTER 1600 APR 12 2002 RECEIVED</p> <p>SEARCHED & TRADEMARK OFFICE APR 11 2002</p>			
<p>Eger et al., "Mechanism of DNA Replication Fidelity for Three Mutants of DNA Polymerase I: Klenow Fragment (KF(exo⁺), KF(pola5), and KF(exo⁻)," <i>Biochem.</i>, 30:1441-1448 (1991).</p>			
<p>Fry and Loeb, <i>Animal Cell DNA Polymerases</i> pp.157-183, CRC Press Boca Raton, FL (1986)</p>			
<p>Joyce and Steitz, "Function and structure relationships in DNA polymerases," <i>Annu. Rev. Biochem.</i> 63:777-822 (1994)</p>			
<p>Kim and Loeb, "Human immunodeficiency virus reverse transcriptase substitutes for DNA polymerase I in <i>Escherichia coli</i>," <i>Proc. Natl. Acad. Sci. USA</i> 92:684-688 (1995)</p>			
<p>Kim et al., "Crystal structure of <i>Thermus aquaticus</i> DNA polymerase," <i>Nature</i> 376:612-616 (1995)</p>			
<p>Kunkel, "DNA replication fidelity," <i>J. Biol. Chem.</i> 267:18251-18254 (1992)</p>			
<p>Kunkel, "Rapid and efficient site-specific mutagenesis without phenotypic selection," <i>Proc. Natl. Acad. Sci. USA</i> 82:488-492 (1985)</p>			
<p>Kunkel and Loeb, "On the fidelity of DNA replication: effect of divalent metal ion activators and deoxyribonucleoside triphosphate pools on <i>in vitro</i> mutagenesis," <i>J. Biol. Chem.</i> 254:5718-5725 (1979)</p>			
<p>Lawyer et al., "Isolation, Characterization, and Expression in <i>Escherichia coli</i> of the DNA Polymerase Gene from <i>Thermus aquaticus</i>, <i>J. Biol. Chem.</i>, 264:6427-6437 (1989).</p>			
<p>Loeb, "Microsatellite Instability: Marker of a Mutator Phenotype in Cancer," <i>Cancer Research</i> 54:5059-5063 (1994)</p>			
<p>Loeb, "Unnatural nucleotide sequences in biopharmaceutics," <i>Advances in Pharmacology</i> 35:321-347 (1996)</p>			
<p>Newcomb et al., "High Fidelity Taq Polymerases For Mutation Detection," <i>FASEB J.</i> 11:A1249, abstract 2295 (1997)</p>			

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	Pandey et al., "Role of Methionine 184 of Human Immunodeficiency Virus Type-1 Reverse Transcriptase in the Polymerase Function and Fidelity of DNA Synthesis," <u>Biochem.</u> , 35:2168-2179 (1996).
	Reha-Krantz and Nonay, "MotifA of Bacteriophage T4 DNA Polymerase: Role in Primer Extension and DNA Replication Fidelity," <u>J. Biol. Chem.</u> , 269:5635-5643 (1994).
	Suzuki et al., "Low Fidelity Mutants in the O-Helix of <i>Thermus aquaticus</i> DNA Polymerase I," <u>J. Biol. Chem.</u> 272:11228-11235 (1997)
	Suzuki et al., "Random mutagenesis of <i>Thermus aquaticus</i> DNA polymerase I: concordance of immutable sites in vivo with the crystal structure," <u>Proc. Natl. Acad. Sci. USA</u> 93:9670-9675 (1996)
	Sweasy and Loeb, "Mammalian DNA polymerase β can substitute for DNA polymerase I during DNA replication in <i>Escherichia coli</i> ," <u>J. Biol. Chem.</u> 267:1407-1410 (1992)
	Tabor and Richardson, "A single residue in DNA polymerases of the <i>Escherichia coli</i> DNA polymerase I family is critical for distinguishing between deoxy- and dideoxyribonucleotides," <u>Proc. Natl. Acad. Sci. USA</u> 92:6339-6343 (1995)
	Tindall and Kunkel, "Fidelity of DNA synthesis by the <i>Thermus aquaticus</i> DNA polymerase," <u>Biochemistry</u> 27:6008-6013 (1988)
	Wainberg et al., "Enhanced Fidelity of 3TC-Selected Mutant HIV-1 Reverse Transcriptase," <u>Science</u> , 271:1282-1285 (1996).
	Washington et al., "A genetic system to identify DNA polymerase β mutator mutants," <u>Proc. Natl. Acad. Sci. USA</u> , 94:1321-1326 (1997).

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